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Quantities of Plant Nutrients Contained in Crops

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When planning your fertilizer or crop residue program, it's useful to estimate the nutrients that last year's crop removed from the soil and this year's crop will need.

Table 1 lists the estimated nutrient content of common South Dakota crops on a

per bushel, 100-weight (cwt), or ton basis. The nutrient content is divided between grain or harvested portion of the crop and the straw.

The listed nutrients are used in relatively large amounts by crops. For example, a 100-bu corn crop contains in

Table 1. Quantities of plant nutrients contained in crops.

	Plant part*	N	<u>Nutrient</u> P ₂ O ₅ K ₂ O S				Plant part*	N	<u>Nutrient</u> P ₂ O ₅ K ₂ O S		
	lb/bu unless otherwise stated						lb/bu unless otherwise stated				
Corn	Grain	0.9	.35	0.3	.09	Soybeans	Grain	3.7	.77	1.4	.23
	Stover	0.5	.15	1.2	.08		Stover	0.8	.17	1.0	.08
	Total	1.4	.50	1.5	.17		Total	4.5	.94	2.4	.31
Oats	Grain	0.9	.25	0.2	.08	Sorghum	Grain	0.5	.27	0.2	.05
	Straw	0.4	.14	1.0	.10		Stover	0.6	.16	0.8	.06
	Total	1.3	.39	1.2	.18		Total	1.1	.43	1.0	.11
Wheat	Grain	1.6	.56	0.3	.11	Potatoes (cwt)	Tuber	0.3	.09	0.5	.03
	Straw	0.8	.26	1.6	.14		Vine	0.2	.05	0.3	.02
	Total	2.4	.82	1.9	.25		Total	0.5	.14	0.8	.05
Barley	Grain	1.1	.41	0.4	.10	Sunflowers (cwt)	Grain	2.8	1.14	0.4	.30
	Straw	0.4	.16	1.2	.10		Stover	2.4	.68	3.3	.50
	Total	1.5	.57	1.6	.20		Total	5.2	1.82	3.7	.80
Rye	Grain	1.4	.48	0.3	.10	Alfalfa (ton)	Total	55	12	50	5.2
	Straw	0.8	.21	1.5	.14						
	Total	2.2	.69	1.8	.24						
Flax	Grain	2.5	.70	0.5	.19	Bluegrass (ton)	Total	30	11	42	5.0
	Straw	0.7	.16	2.2	.15						
	Total	3.2	.86	2.7	.34						
						Bromegrass (ton)	Total	32	8.4	43	5.0
						*Values in table do not account for nutrients contained in root system.					

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the grain and stover 140 lb nitrogen, 50 lb P_2O_5 , 150 lb K_2O , and 17 lb sulfur per acre.

A 45-bu wheat crop contains 108 lb nitrogen, 37 lb P_2O_5 , 86 lb K_2O , and 11 lb sulfur per acre in the grain and straw.

Even though these nutrients are used in large amounts by crops, some of them, such as potassium and sulfur, are usually found in such large quantities in the soil that applying them as fertilizer is not necessary. Calcium and magnesium are also taken up in large quantities by crops; however, supplies in the soil are so large that nutrient removal is not a concern.

Micronutrients such as zinc, iron, copper, manganese, chlorine, and boron are used in very small amounts by crops. Removal of these nutrients, therefore, is not usually an important consideration in

crop management, even though some crops will respond to zinc and chloride fertilization under certain conditions.

Corn, for example, will respond to zinc fertilization when soil test levels are low, even though a 160-bu corn crop will contain only about 2 ounces of zinc per acre in the above-ground portions of the plants.

Knowing the nutrient content of crops can help in making some crop management decisions. If fertilizer recommendations are to be reliable, however, they must always be made on the basis of a soil test.

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